

# Technical Symposium



**PLANET VIRTUAL BOY**

[HTTP://WWW.VR32.DE](http://www.vr32.de)



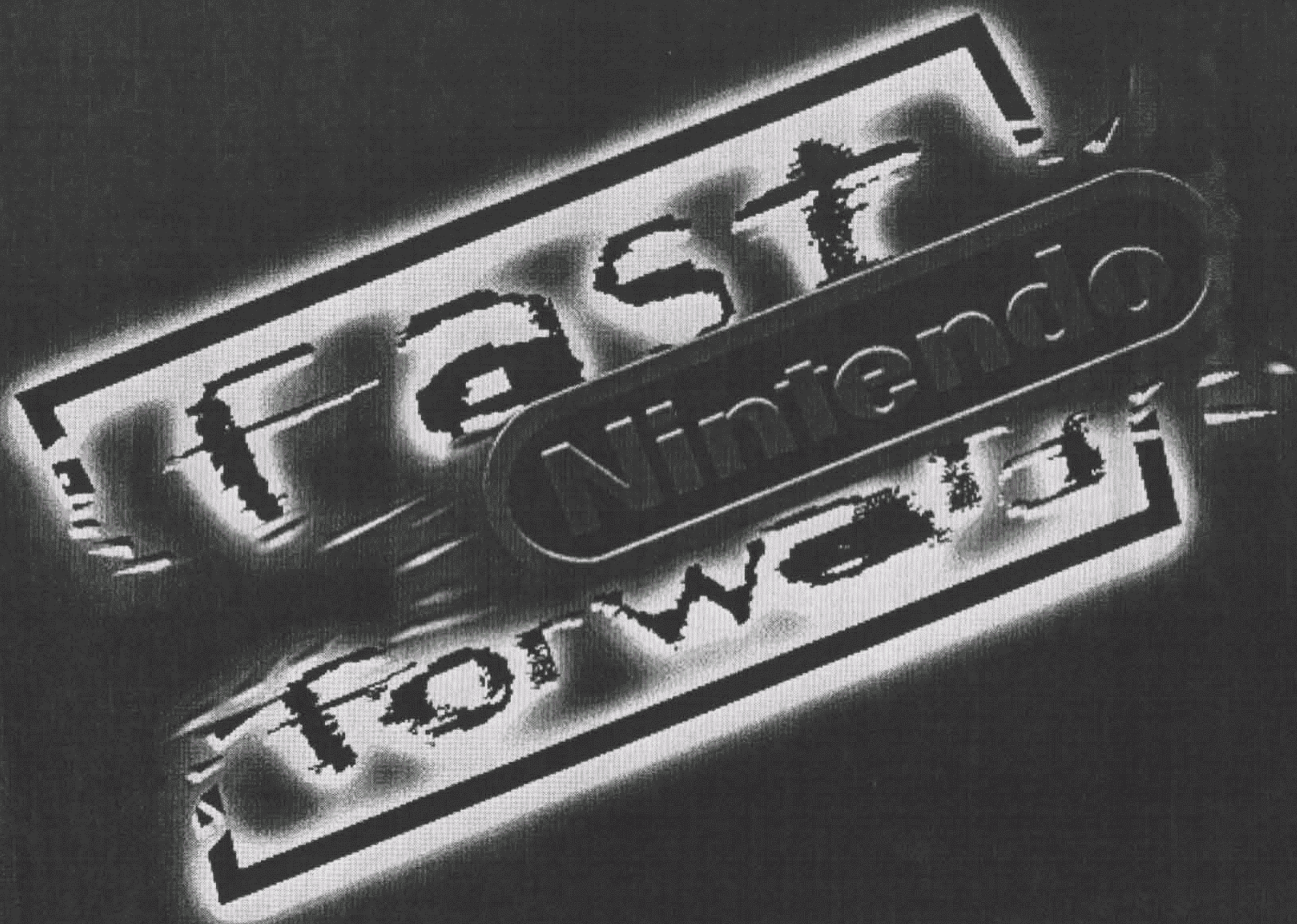
# Marketing Overview

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Don Coyner,  
Nintendo Advertising



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# What does Fast Forward mean...

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- More great products
- More aggressive marketing
- More integrated marketing programs
- Stronger advertising
- Better retailer partnerships



(c) 1995 by Nintendo of America, Inc.

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# VIRTUAL BOY MARKETING LAUNCH PLAN

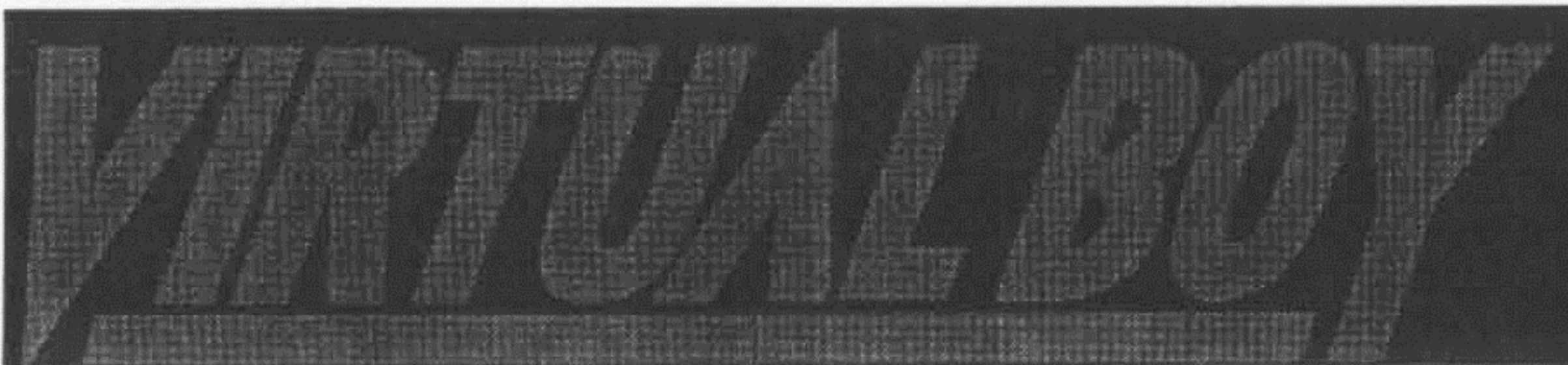


(c) 1995 by Nintendo of America, Inc.

# Marketing Objectives

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- Generate excitement and anticipation
- Generate trial and purchase



(c) 1995 by Nintendo of America, Inc.

# Marketing Strategies

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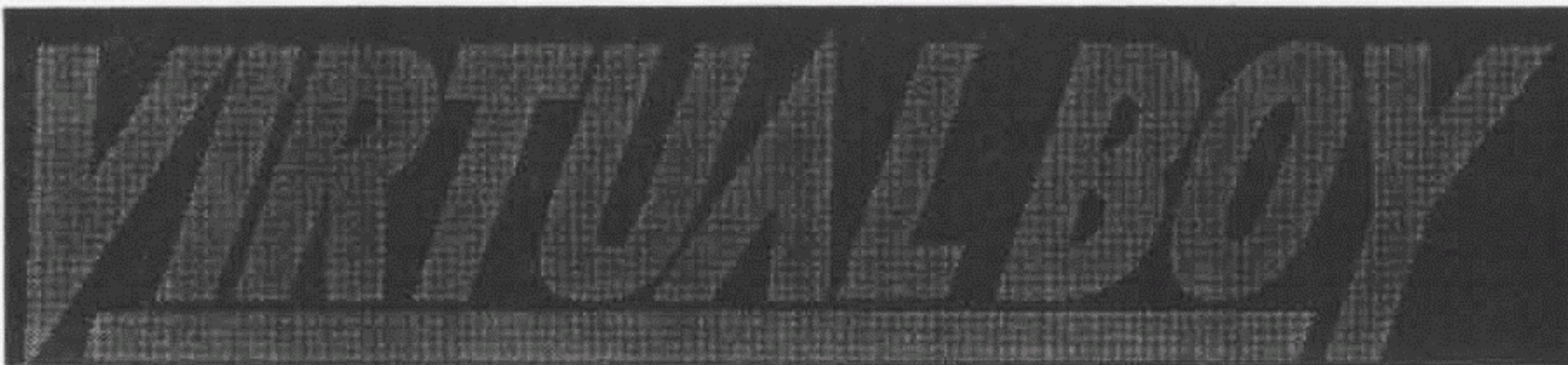
- Spend \$20MM+
- Major pre-sell campaign
- Multi-faceted, multi media campaign at launch



(c) 1995 by Nintendo of America, Inc.

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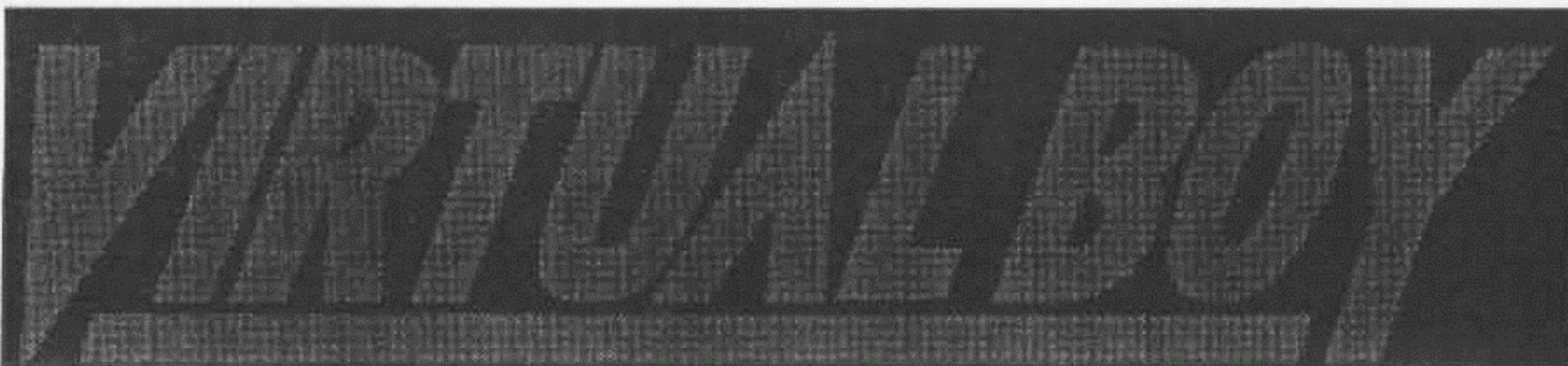
# EXECUTIONAL ELEMENTS



(c) 1995 by Nintendo of America, Inc.

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# LAUNCH PLAN

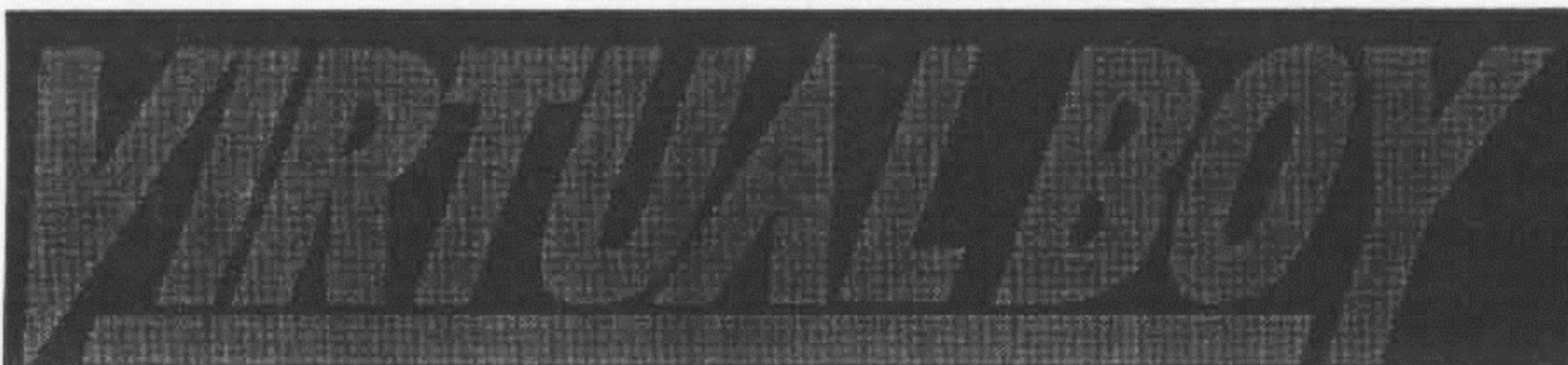


(c) 1995 by Nintendo of America, Inc.

# PRE-SELL CAMPAIGN

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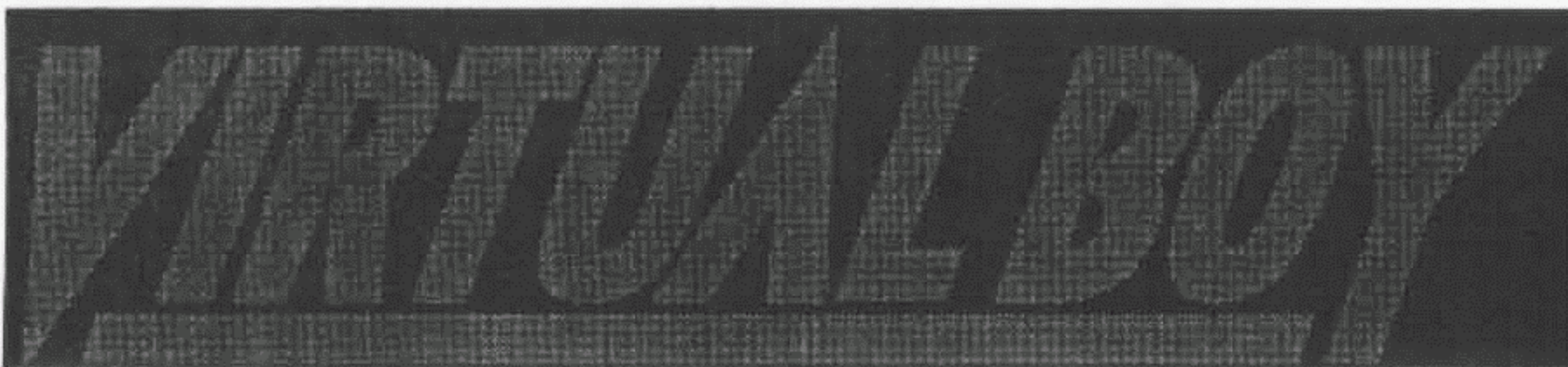
- Pre-sell video tape to tease
- Teaser print ads in gaming magazines
- Ensure editorial coverage prior to launch
- Nintendo Power
- Generate trade excitement



# Television

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- Multiple television commercials
- Target all key audiences
- Use out-of-home television outlets



# PRINT

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- All video game enthusiast magazines
- Impactful, unusual ad vehicles in gaming magazines
- Nintendo Power



(c) 1995 by Nintendo of America, Inc.

# PROMOTIONS

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- Tie-in promotions



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# MERCHANDISING

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- Distinctive in-store presence
- Hands-on trial displays
- Strong use of other POS materials
- In-store demonstrator program



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# OTHER TRIAL GENERATING PROGRAMS

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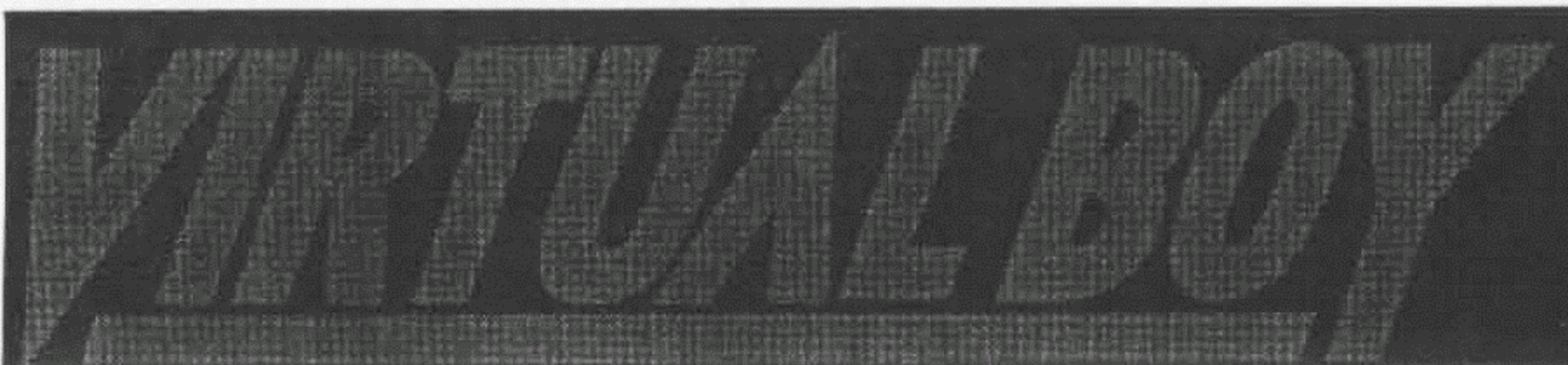
- Demo units in lobbies of theaters
- National tour to local communities



# ON-LINE SERVICES

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- Nintendo's on-line vehicles



# COOP/RMP

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- Ensure strong COOP/retail advertising



# Virtual Boy...

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- \$20 million marketing budget
- Broad reach
- High impact marketing vehicles
- Great product support

...an Assured Success!!



(c) 1995 by Nintendo of America, Inc.

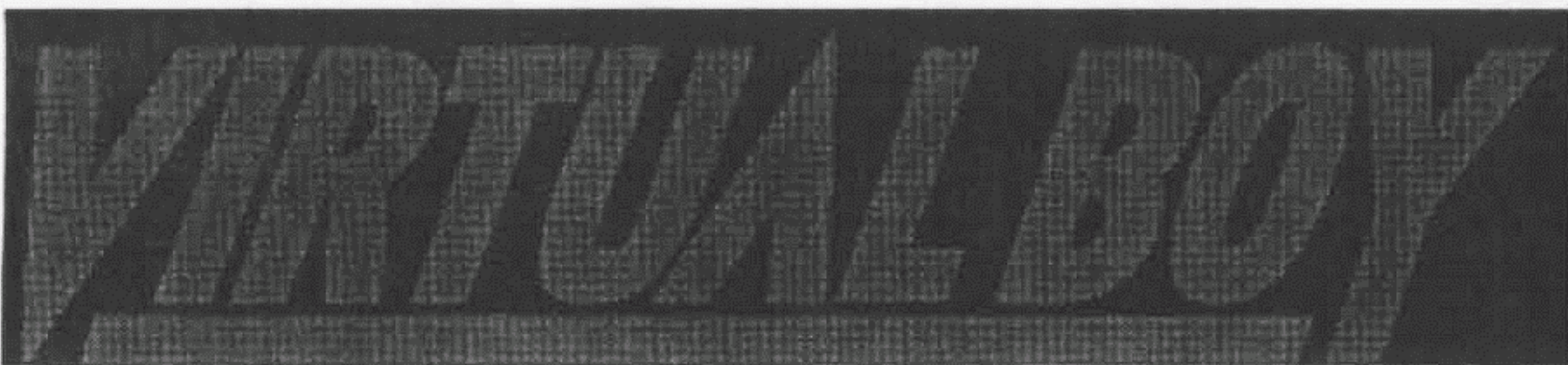
# Technical Symposium



# Demonstrations

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- Demo 1: Prototype by Hudson
- Demo 2: “Space Pinball” by Nintendo
- Demo 3: Example: Dolphins & F1
- Demo 4: “Teleroboxing” by Nintendo
- Demo 5: Example: Mario
- Demo 6: “Red Alarm” by T&E



# Technical Symposium



# Marketing Overview

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Jim Merrick,  
Nintendo Licensee Support Group



(c) 1995 by Nintendo of America, Inc.

# NEC V810 CPU (NVC)

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- 32 bit RISC processor, 20 MHz clock speed
- 32 general purpose registers
- 16/32 bit instruction format
- Integrated floating point arithmetic
- 1 Kbyte instruction cache
- Nintendo custom functions



# RAM

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- 1 Mbit of dynamic RAM
  - ◆ Background (BG) map data
  - ◆ Object Attribute Memory (OAM)
  - ◆ Various parameters & attributes
- 512 Kbits of pseudo-static work RAM



# Virtual Image Processor (VIP)

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- Unique, 20MHz dedicated image processing IC
- 1024 (8 x 8 pixels) objects (OBJs).
- Vertical and horizontal inversion for OBJs
- 32 backgrounds (BGs) from 8 x 8 to 384 x 224 pixels in size
- Parallax control registers for OBJs & BGs



# Video RAM (VRAM)

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- 1Mbit dual ported VRAM
- Double buffering for each eye
- 2048 OBJ/BG characters

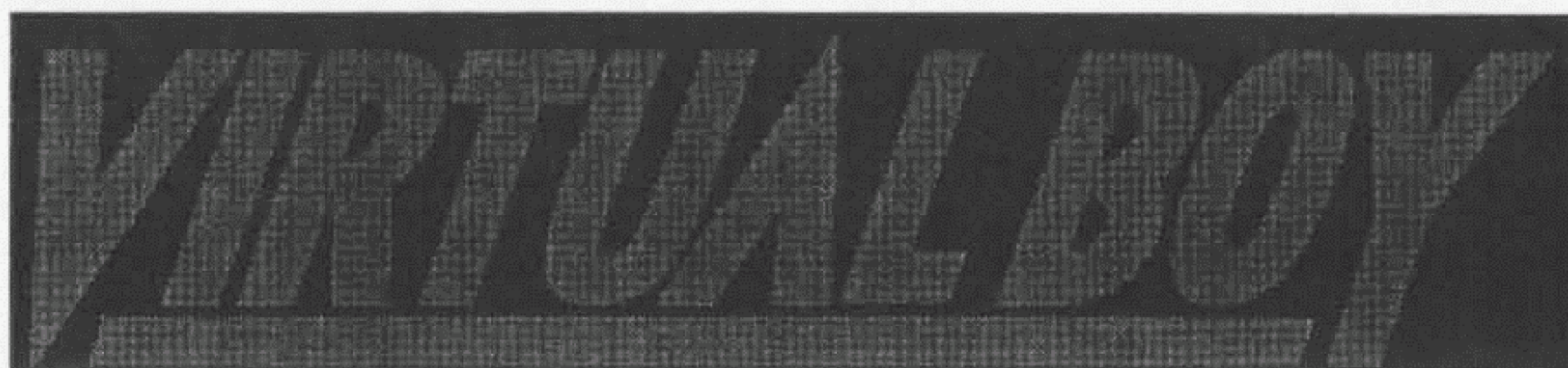
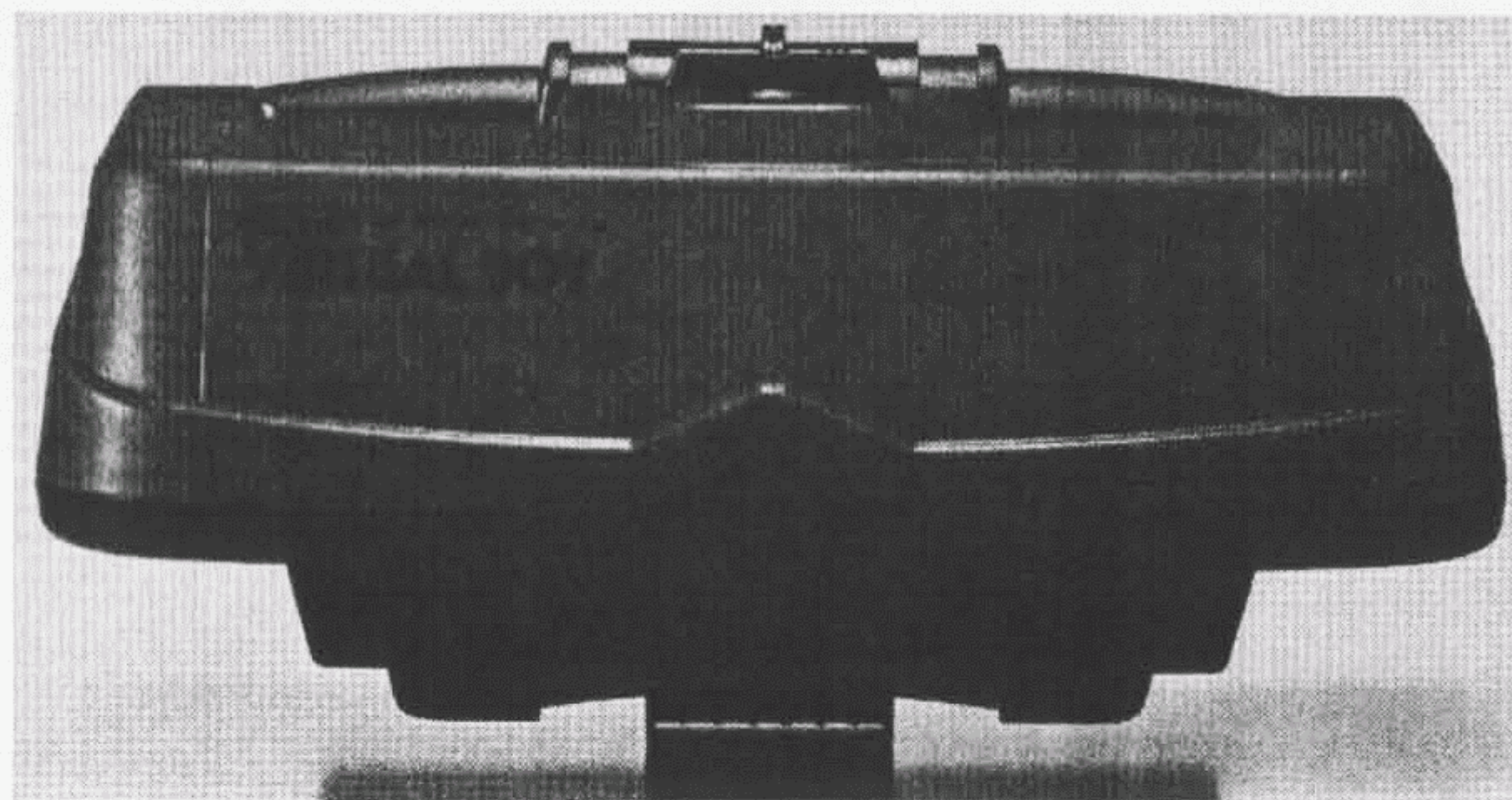


(c) 1995 by Nintendo of America, Inc.

# Display Scanner

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- 384 x 224 pixels for each eye
- 48 x 28 characters
- 2 bits per pixels (4 shades)



(c) 1995 by Nintendo of America, Inc.

# Display Scanner

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- How is the illusion of depth created?
  - ◆ Parallax
  - ◆ Affine tables, H-Bias tables, 32 worlds
  - ◆ Depth cueing
  - ◆ Direct writing to double buffered frame buffers

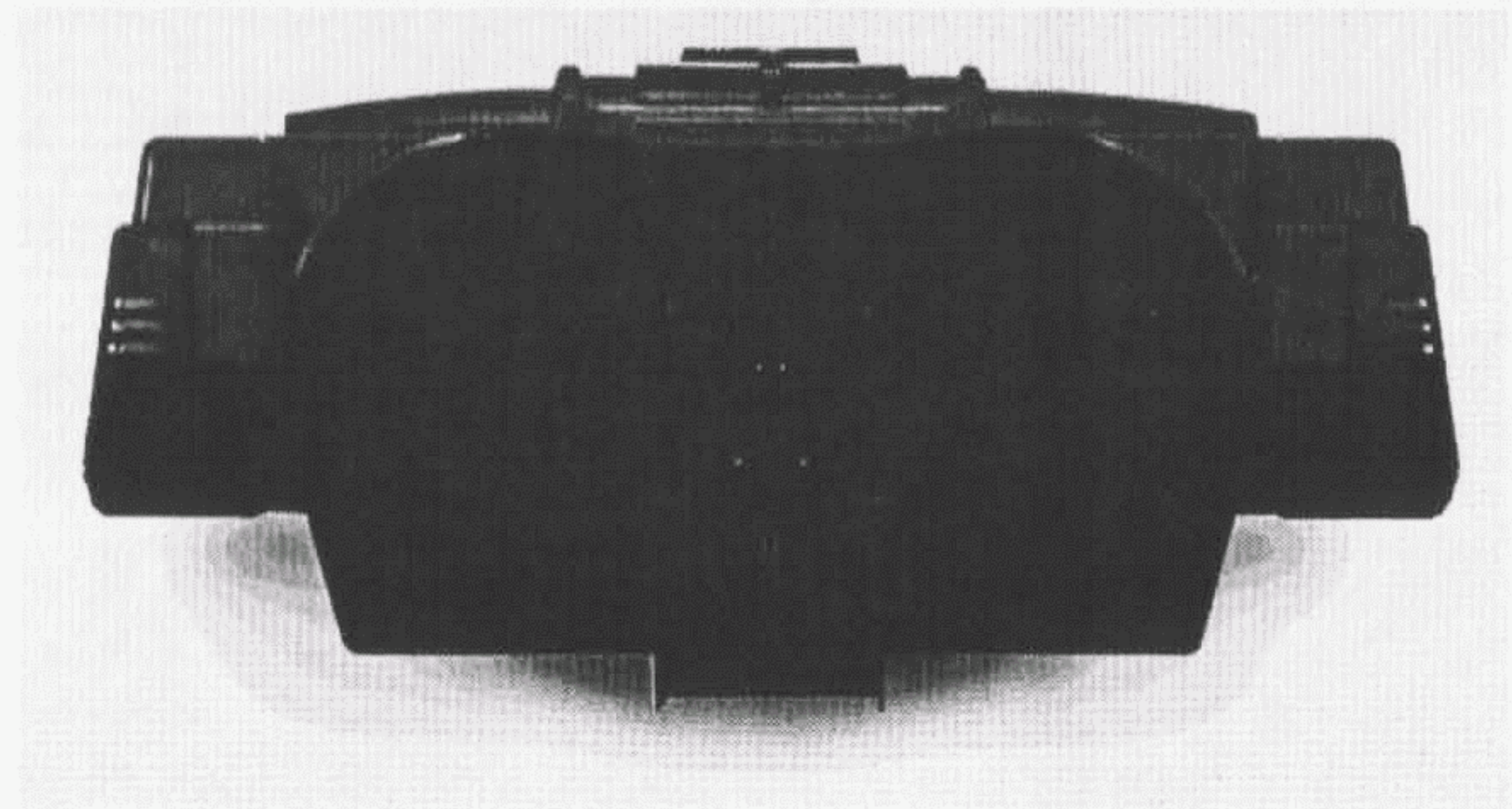


Image Seen by Left Eye

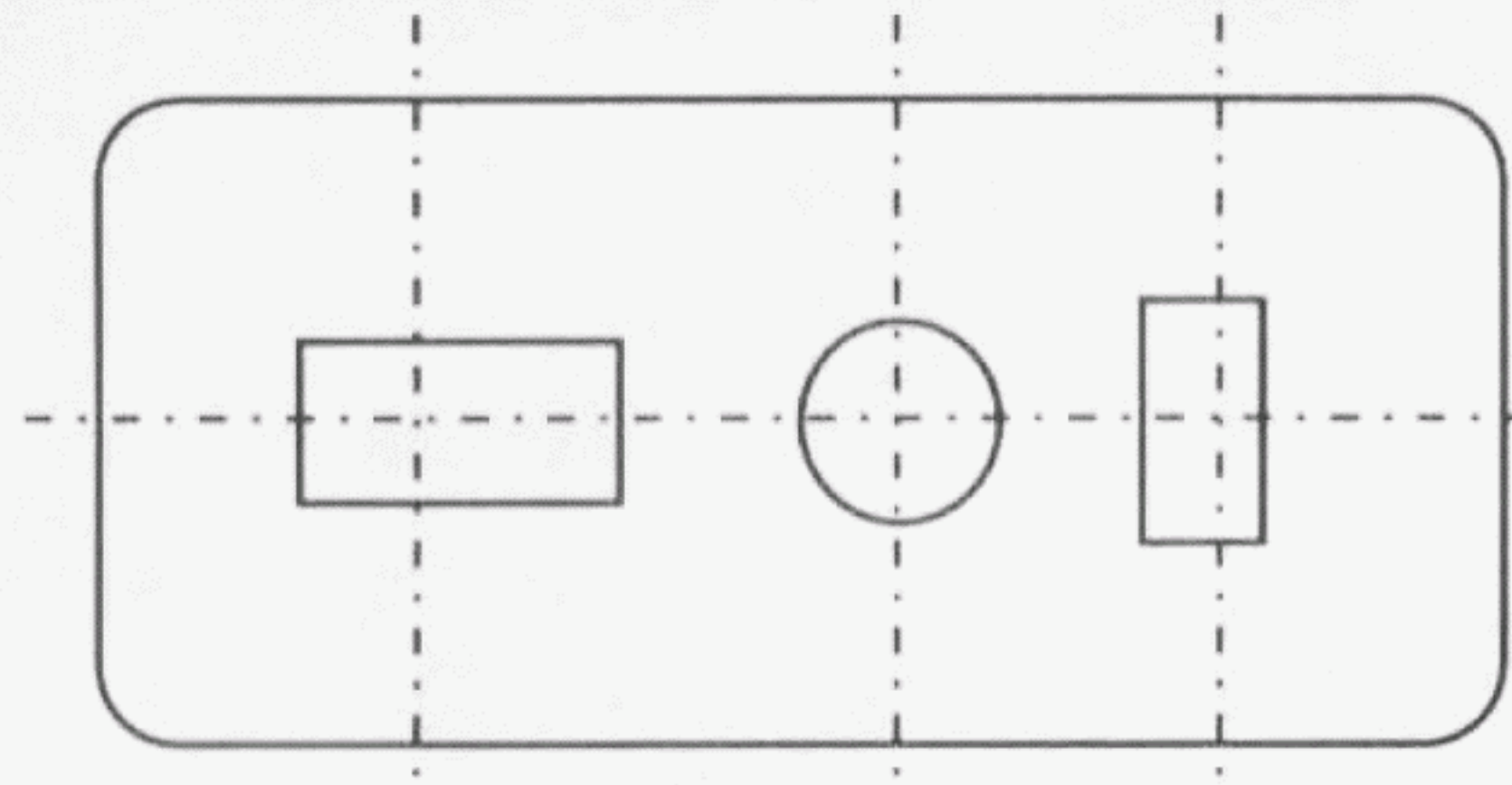
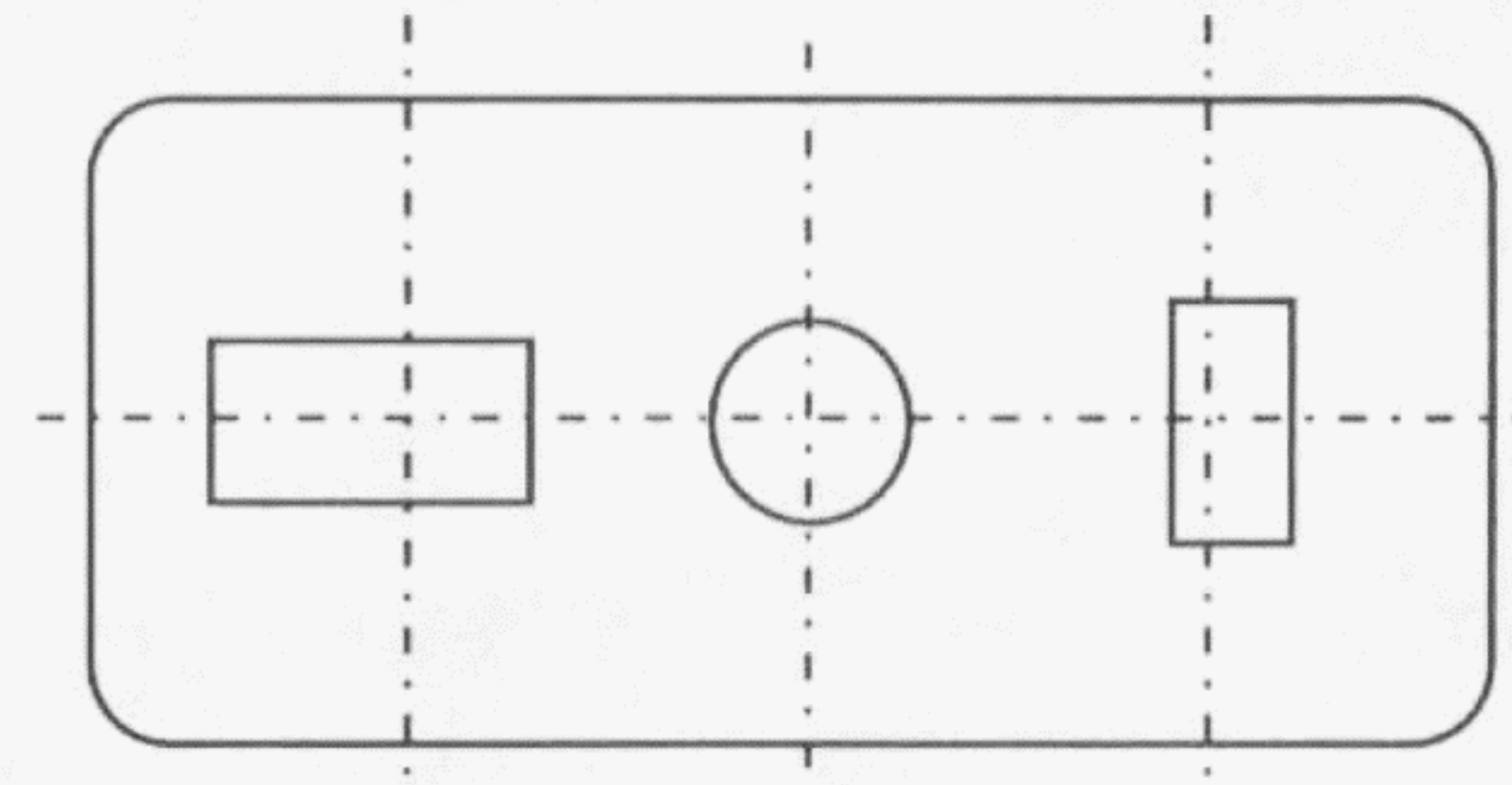


Image Seen by Right Eye



Shifted to the inside on the left and right screens

Displayed at the same location on the left and right screens

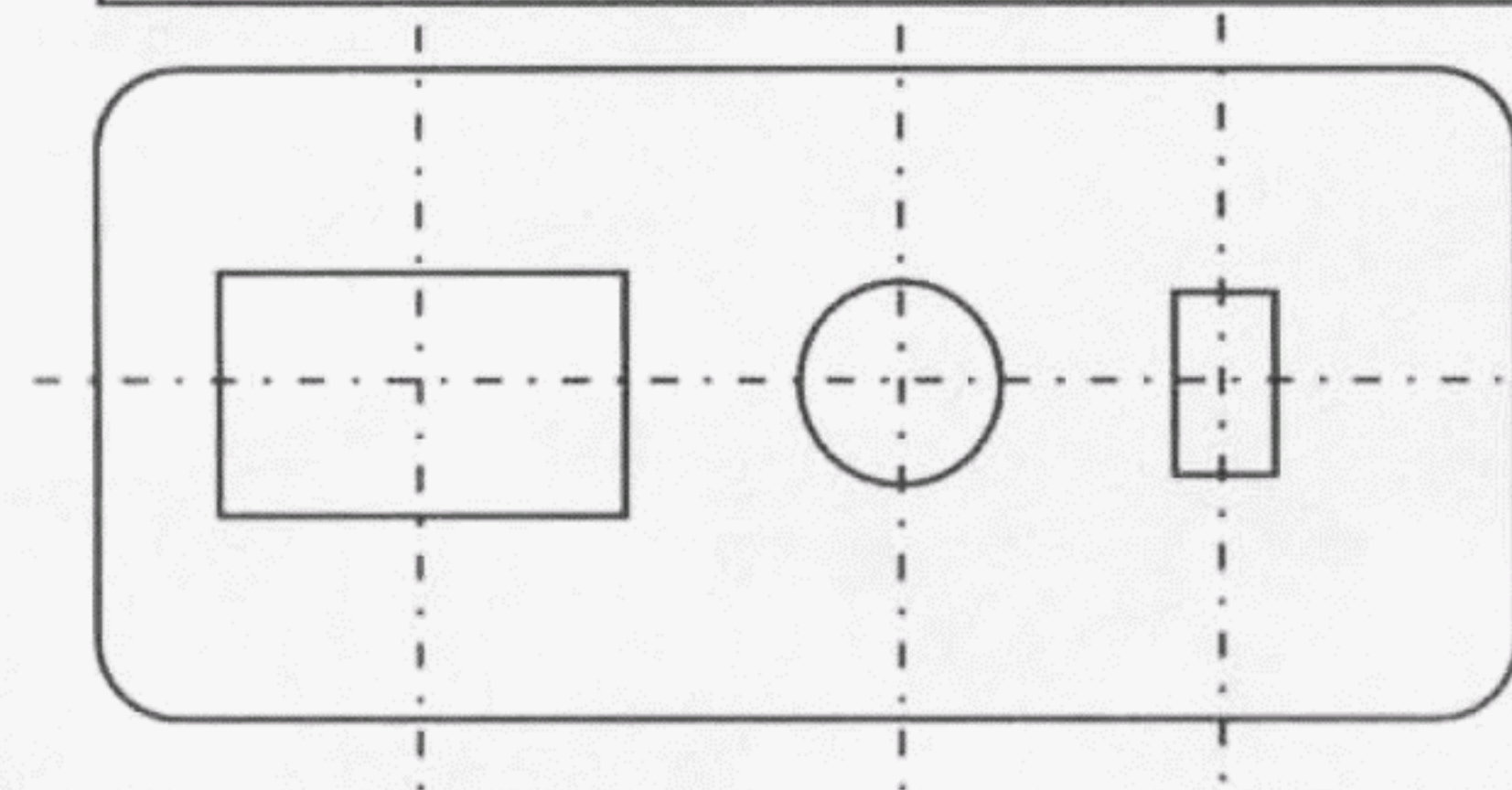
Shifted to the outside on the left and right screens

Shifted to the inside on the left and right screens

Displayed at the same location on the left and right screens

Shifted to the outside on the left and right screens

Image As Interpreted by Brain



Appears Closest

Appears to be at a location between the other two objects

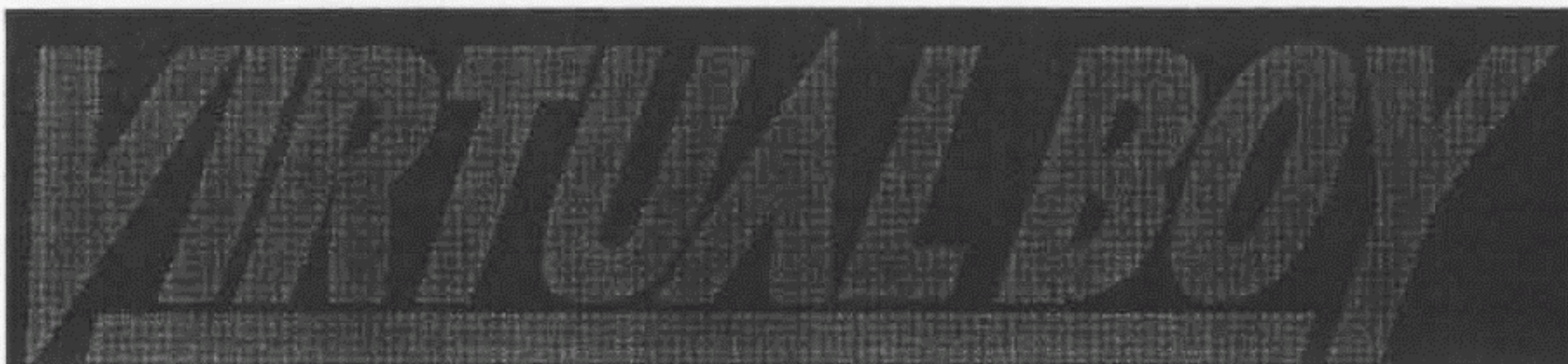
Appears Farthest Away



# Display Scanner

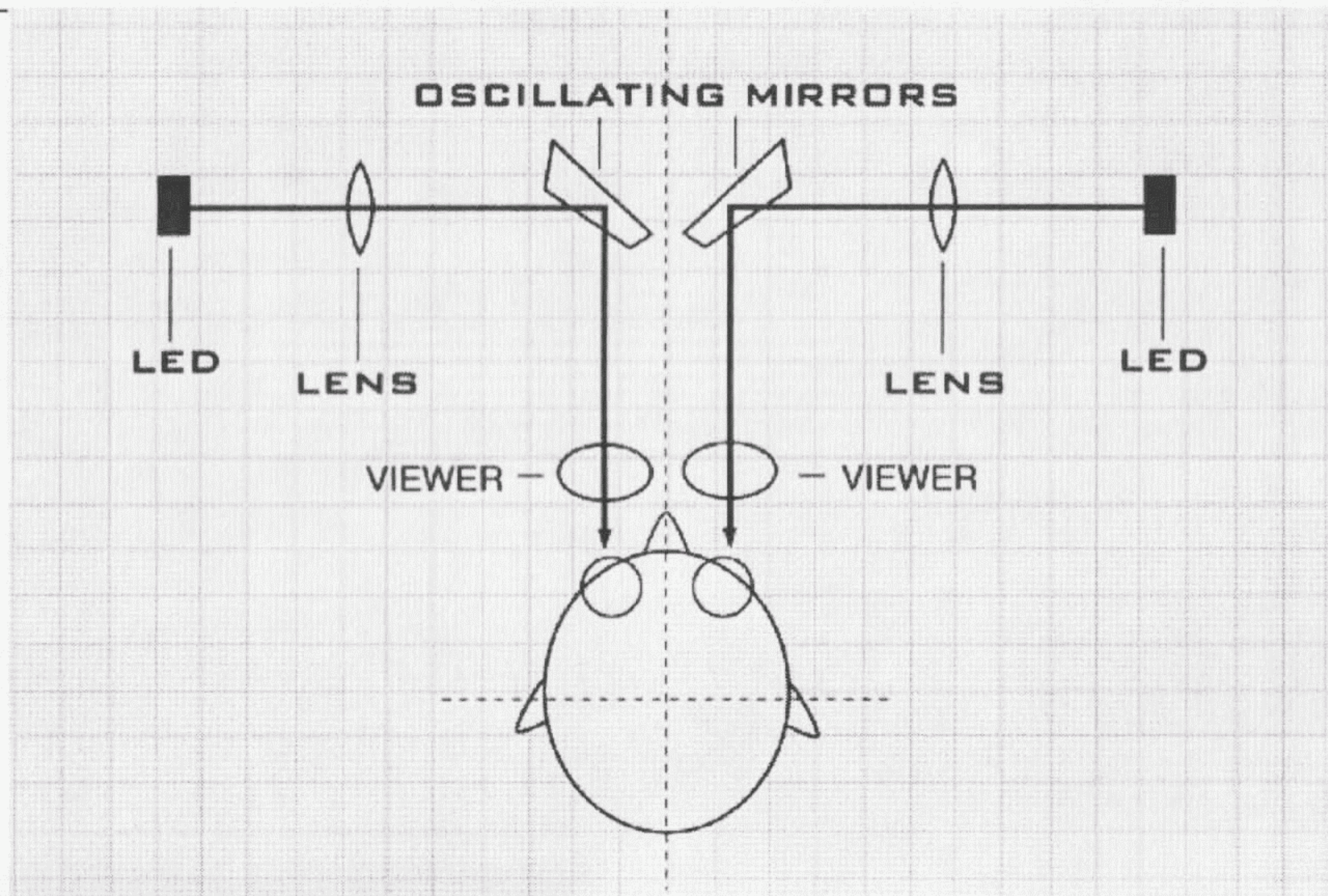
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- Reflection Technologies, Incorporated
  - ◆ Founded in 1987 by scientists from MIT
  - ◆ Unique SLA technology is internationally patented
  - ◆ Nintendo hold exclusive license for gaming applications
  - ◆ Nintendo holds a minority interest in RTI



# Display Scanner

50 in



(c) 1995 by Nintendo of America, Inc.

# Virtual Sound Unit (VSU)

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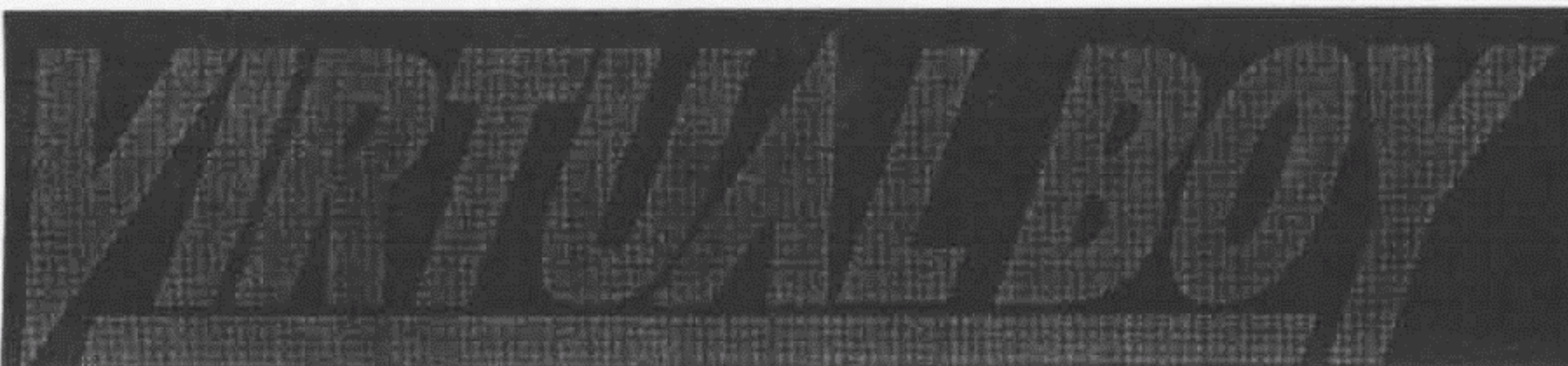
- Four channels for waveform with envelope
- One channel for waveform with envelope, sweep or modulation
- One noise source channel
- 6bit x 32-word Audio RAM for each waveform channel
- separate left and right levels for each source



# Controller

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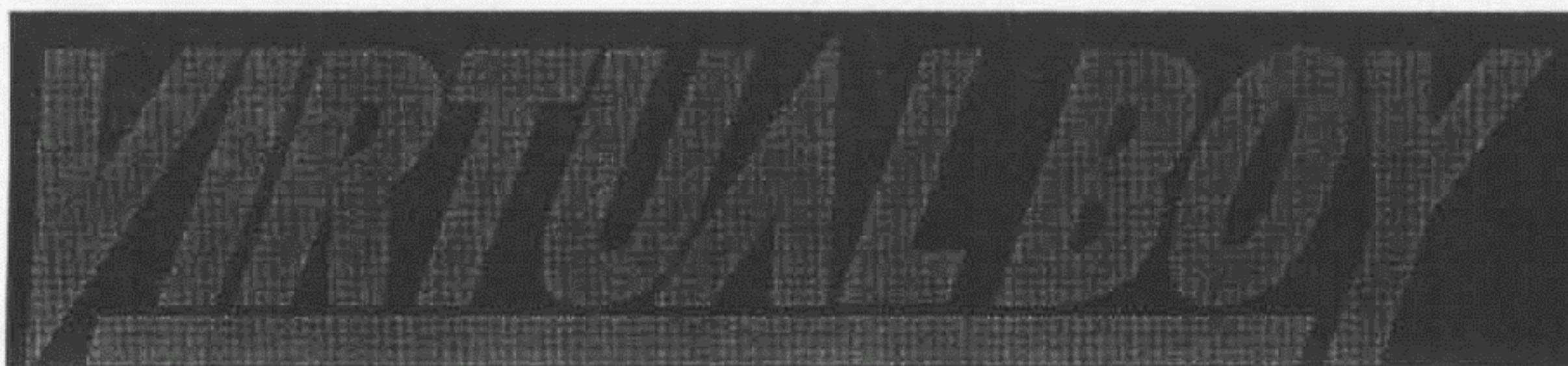
- dual grips
- 6 buttons
- two 'plus' pads for full control in 3D
- Power switch
- Battery pack, external power jack



# Game Pak

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- Up to 128Mbit ROM and 128Mbit RAM addressable
- Initially available in:
  - ◆ 8 Mbit or 16 Mbit ROM
  - ◆ 64 Kbit battery backed, static RAM



# Communications port

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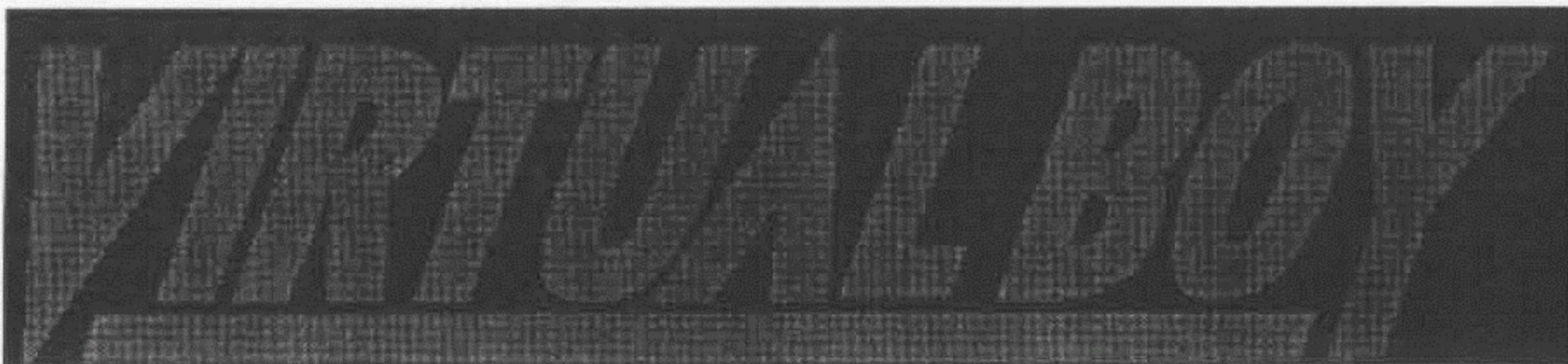
- ‘Playlink’
- Four wire
- Hardware handshaking
- Baud rates up to 50k
- connect two or potentially more Virtual Boys



# Availability

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- Retail release this summer
- Developer's tools available mid-May



# Technical Symposium



# Programming Tips & Cautions

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Rick Flamm,  
Nintendo Legal Department

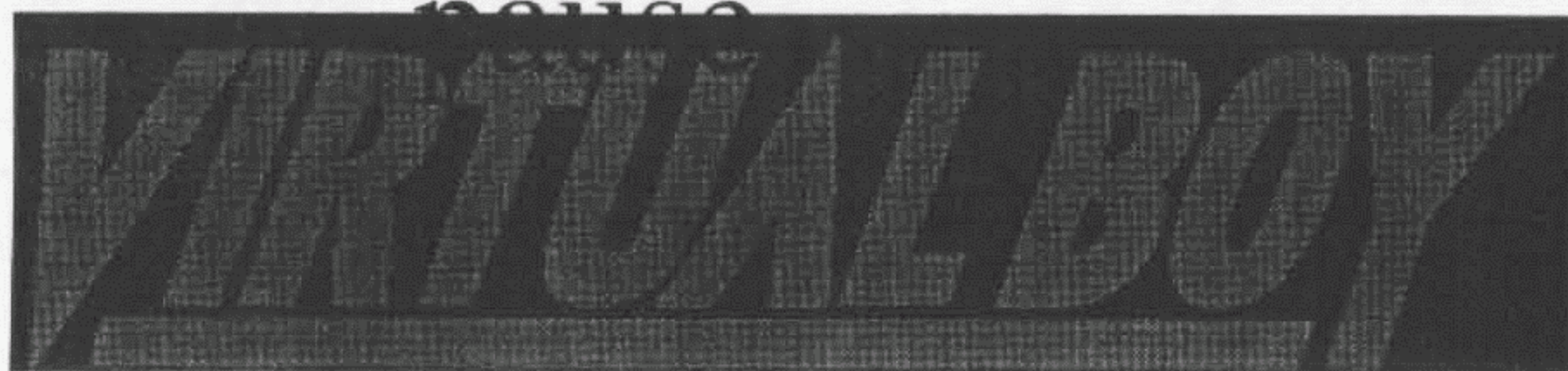


# Mandatory Programming Requirements

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- Reference to manual in initial screen:
  - ◆ IMPORTANT: READ INSTRUCTION AND PRECAUTIONS BOOKLETS BEFORE OPERATING
- Focus & IPD adjustments screen
- Automatic pause feature
- Focus & IPD adjustments during game

30 MINS OF CONTINUOUS GAME PLAY



# Programming Guidelines

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Jim Merrick,  
Nintendo Licensee Support Group

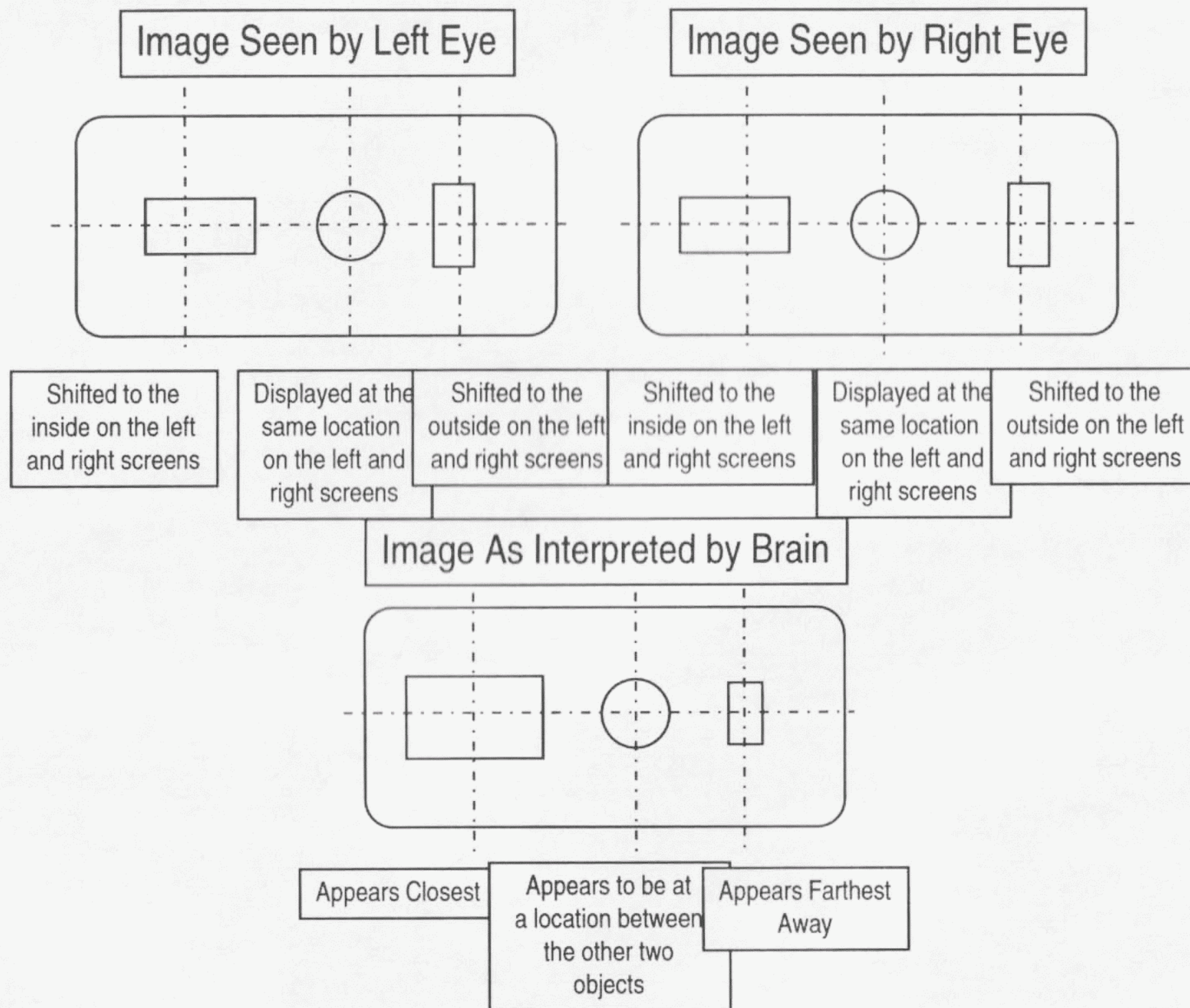


# Disparity

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- Max. uncrossed disparity less than 56 pixels
- Max. crossed disparity 300 pixels for one OBJ
- Disparity bounds within the ‘comfort zone’
  - ◆ uncrossed disparity of 28 pixels or less
  - ◆ crossed disparity of 42 pixels or less
  - ◆ relative disparity of 40 pixels or less

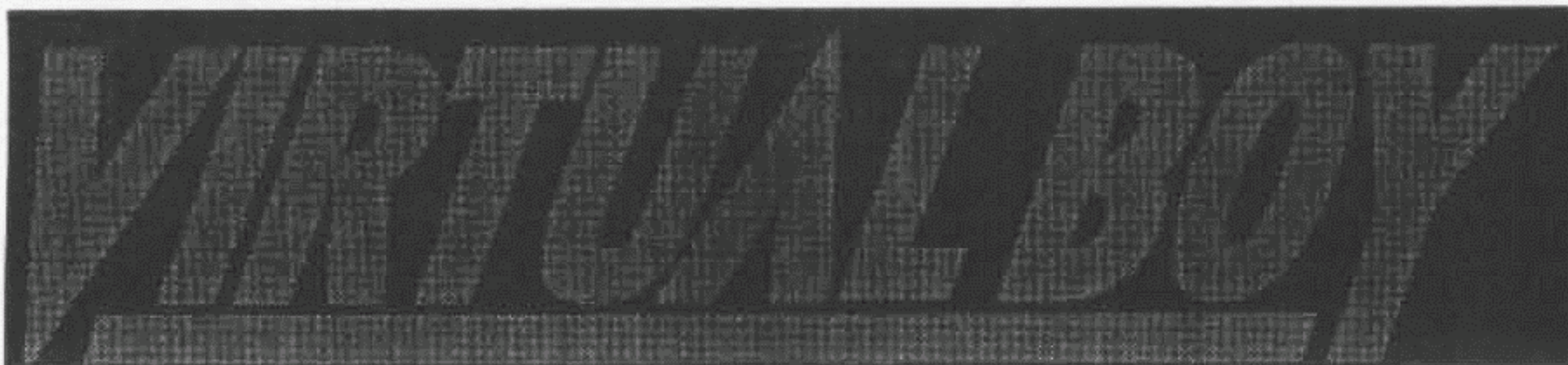




# Disparity

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- Range of disparity without convergence
  - ◆ 4 - 5 pixels in center of vision
  - ◆ Less than  $\frac{1}{4}$  second for higher disparity
  - ◆ Higher disparity in peripheral vision
  - ◆ Scaling with disparity



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Image Seen by Left Eye

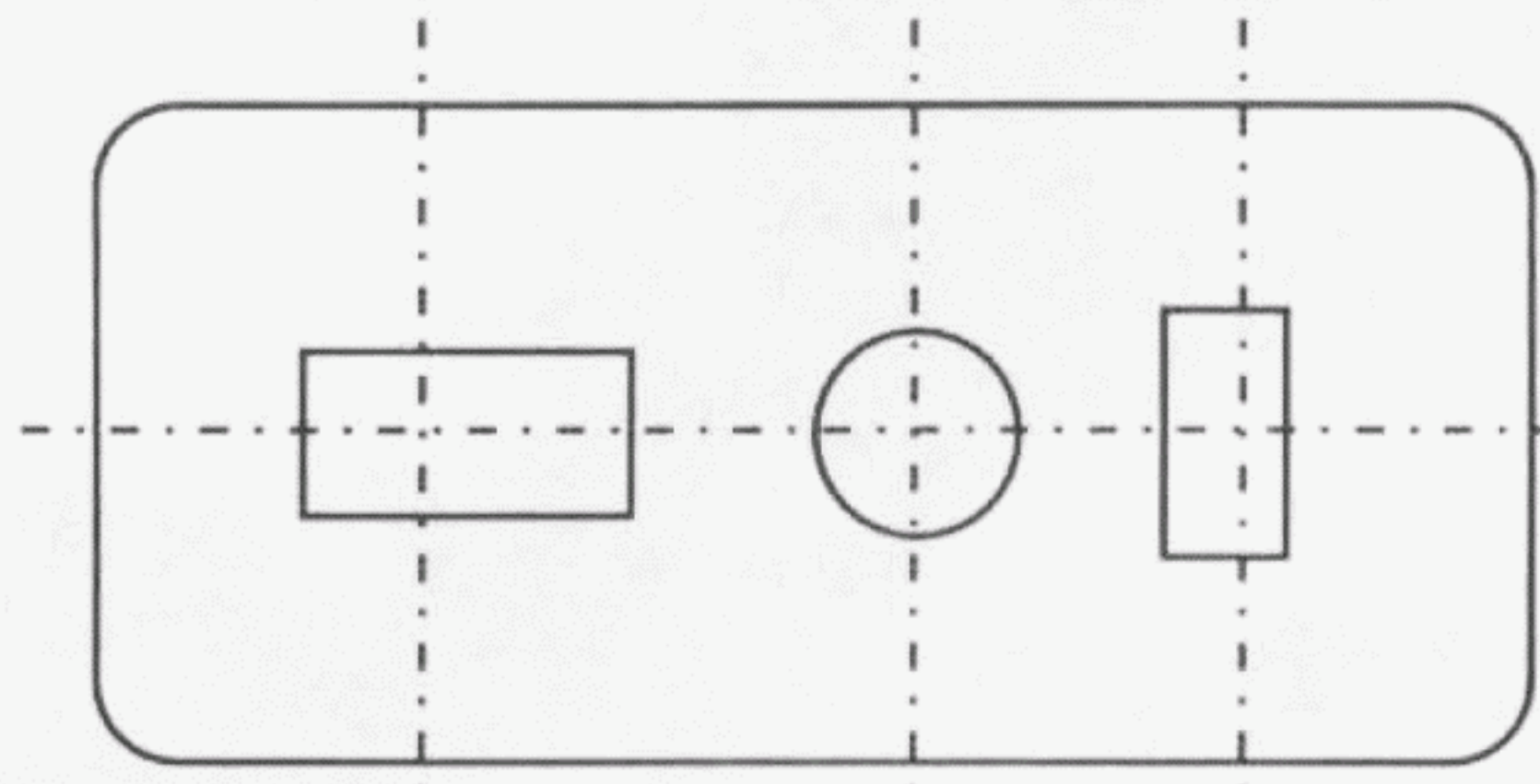
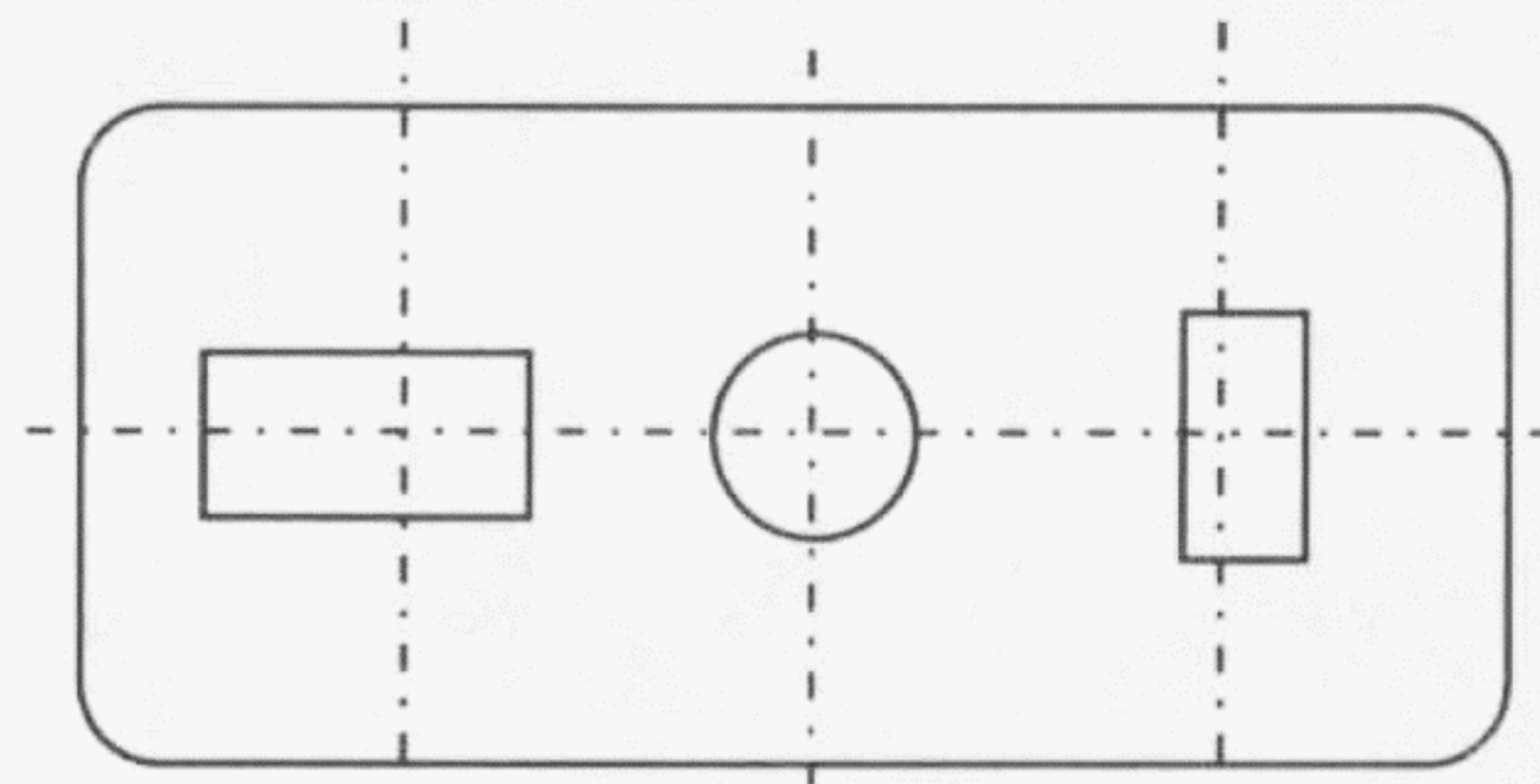


Image Seen by Right Eye



Shifted to the inside on the left and right screens

Displayed at the same location on the left and right screens

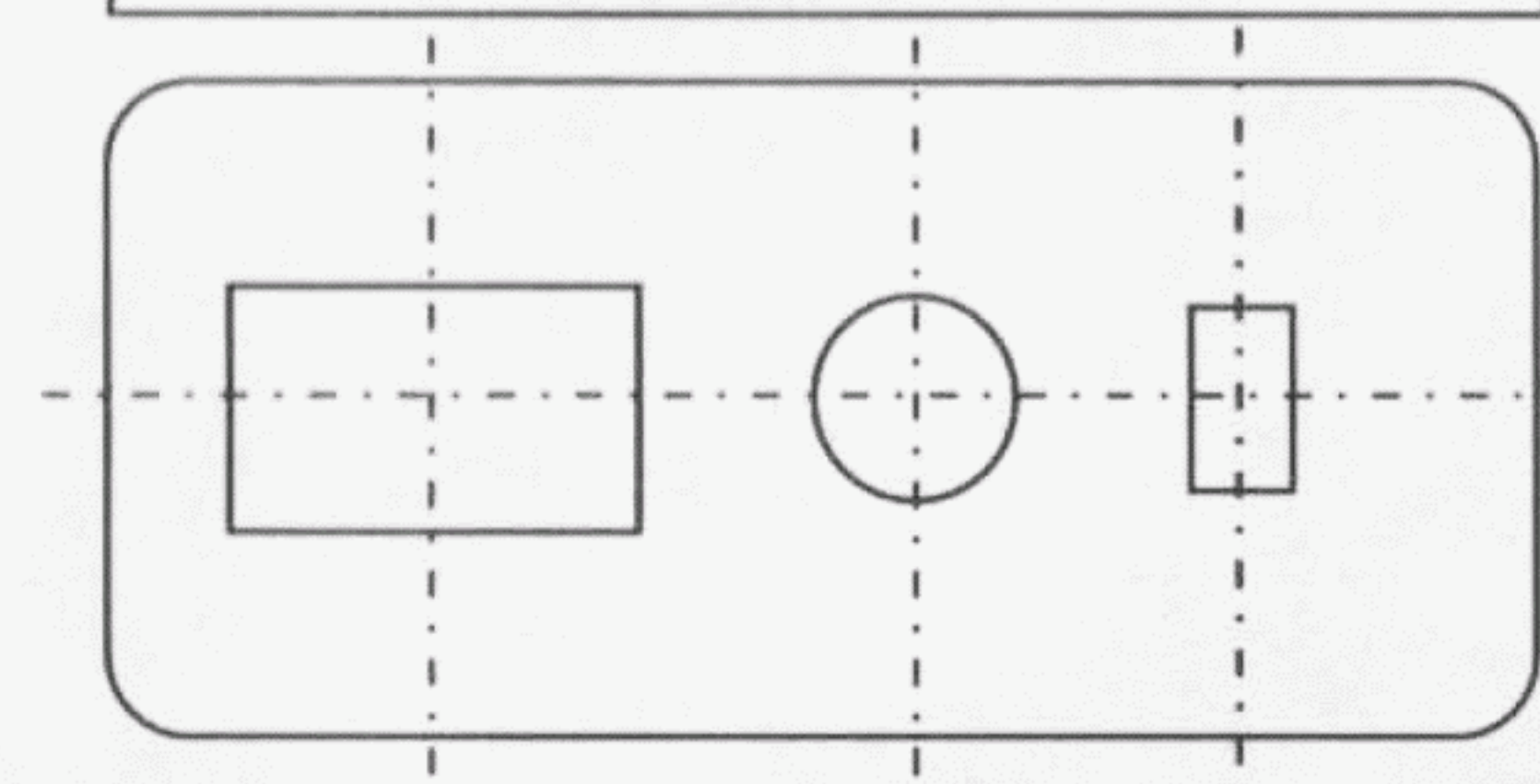
Shifted to the outside on the left and right screens

Shifted to the inside on the left and right screens

Displayed at the same location on the left and right screens

Shifted to the outside on the left and right screens

Image As Interpreted by Brain



Appears Closest

Appears to be at a location between the other two objects

Appears Farthest Away



# Additional Recommendations

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- Display the main character or item of interest on the ‘virtual screen’
- Do not display totally different patterns and images between left and right screens

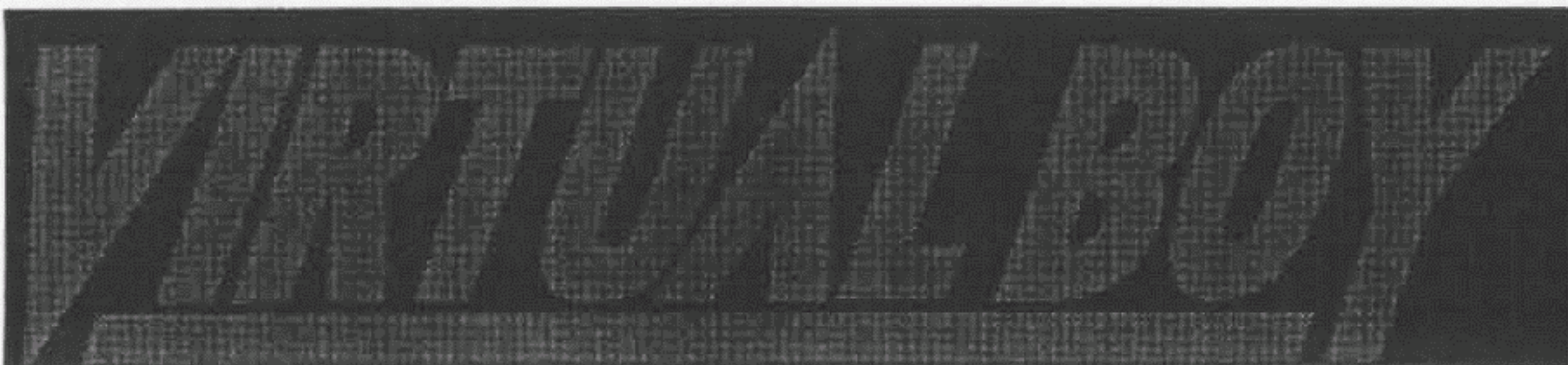


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# Product Submission

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Sean O'Connor,  
Nintendo Product Analysis



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# Concept Pre-Approval

[GET TO SHAWN.]

- Design Specification document submitted prior to programming
  - ◆ Story line
  - ◆ Characters
  - ◆ Sketches
  - ◆ Game Pak configuration
  - ◆ Intended release date



# Concept Pre-Approval

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- Reasons for needed modifications:
  - ◆ Technical limitations
  - ◆ Objectionable content
  - ◆ Similarity to products already released or in development
  - ◆ Unsuitable for Virtual Boy



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# Submission Requirements

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- Similar to SNS in regard to ROM registration

**PRELIMINARY**



# Technical Symposium



# VUE Development System

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Tsuyoshi Kiyuna,  
Nintendo Licensee Support Group



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# Hardware

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- VUE Debugger
- Display Unit
- Virtual Boy Controller
- IBM I/F Board
- Other
  - ◆ Power Code
  - ◆ SCSI Cable, SCSI Terminator

IBM



# Software

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- Assembler (ISAS) 2 PASS.
- Linker (ISLK)
- Debugger Control Software
- IBM I/F Board Driver
- DOS Extender (DOS4GW)



# Operational Environment

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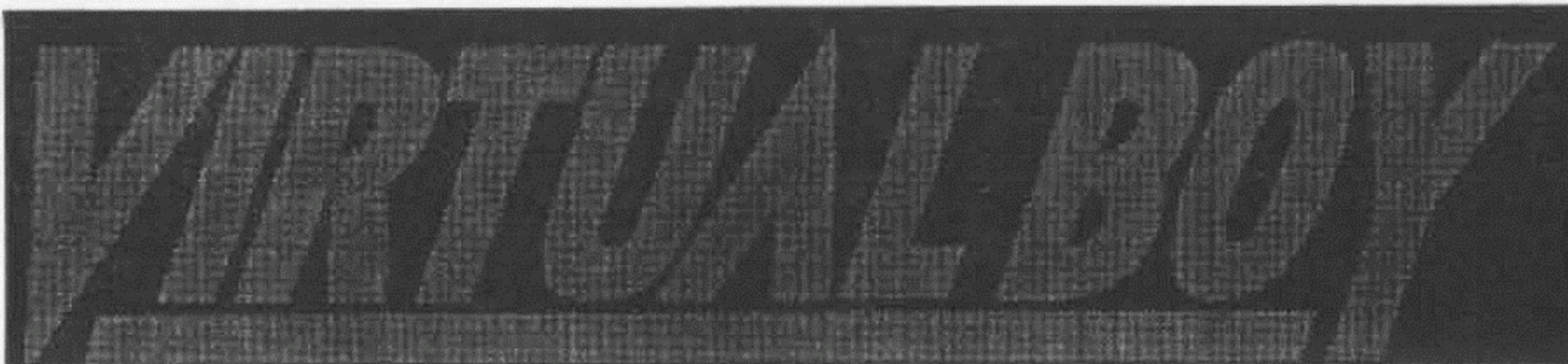
- Computer IBM-PC/AT fully compatible
- Memory 200kB for conventional, 2MB for expanded
- Mouse Microsoft or fully compatible
- Expansion Slot One ISA expansion slot
- Video Adapter VGA or SVGA
- Hard Drive 1MB for instllation, 500kB for temp. storage
- Operating Software MS-DOS/PC DOS or fully compatible



# Software

---

- Assembler (ISAS)
- Linker (ISLK)
- Debugger Control Software (ISW)
- IBM I/F Board Driver
- DOS Extender (DOS4GW)



# Assembler & Linker

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| <u>Version</u> | <u>Assembler</u> | <u>Linker</u> |
|----------------|------------------|---------------|
| MS-DOS         | ISAS.EXE         | ISLK.EXE      |
| DOS/4GW        | ISAS4G.EXE       | ISLK4G.EXE    |



# Software

---

- Assembler (ISAS)
- Linker (ISLK)
- Debugger Control Software (ISW)
- IBM I/F Board Driver
- DOS Extender (DOS4GW)



# Debugger Control Software ISW

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Source Window

Dump Window

Stack Window

Watch Window

Command Window

Disassemble Window

Register Window

Break Window

History Window

Help Window



# Options

- C-Compiler
- 4Mbyte Expansion Emulation RAM
- Video Adapter

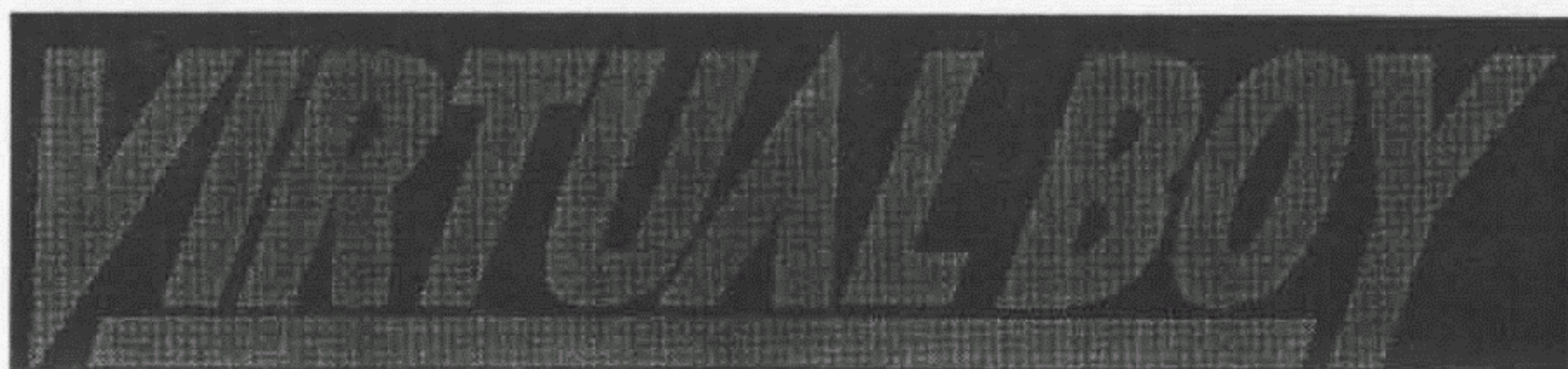
INTELLIGENCE  
SYSTEMS

ASCII

GREEN HILLS



DO WE NEED THIS FOR SUBMISSIONS



# Price

- 
- VUE Development System \$14,000
  - 4Mbyte Expansion Emulation Memory \$450
  - C-Compiler \$2,000

VIDEO ADAPTER BOARD.

\$2700

AVAILABLE MID MAY.



# Evaluation PCBs

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- EP-ROM PCB
  - ◆ 8Mbit (4Mbit x 2) ROM or 16Mbit (8Mbit x 2) + Battery & 64kbit RAM
- FLASH ROM PCB
  - ◆ 8Mbit ROM + Battery & 64kbit RAM
  - ◆ 16Mbit (8Mbit x 2) ROM + Battery & 64kbit RAM

AVAILABLE MID MARCH.



# Technical Symposium

